UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
WASHINGTON

CONSTRUCTION SPECIFICATION

CS-14 EARTH FILL, CLASS A

14.1 SCOPE

The work shall consist of the construction of compacted earth fills where the amount of compaction is to be checked and controlled by standard compaction tests and continuous inspection.

14.2 MATERIALS

All fill material shall be obtained from the approved excavation or borrow areas. The selection, blending, routing and disposition of materials within the embankment shall be subject to the approval of the technician. Fill materials shall contain no frozen material and shall be free of all organic and foreign material. The maximum size of rock fragments incorporated in the compacted earthfill shall be six (6) inches, provided that such rock fragments are completely imbedded in the matrix of the compacted earthfill

14.3 FOUNDATION PREPARATION

After stripping, the foundation shall be scarified or plowed to a minimum depth of 2 inches. The foundation area shall be bonded with the first layer of fill and compacted to the density and moisture specified for the fill. No foundation and abutment surface shall be steeper than 1:1 unless otherwise specified on the drawings.

14.4 PLACEMENT

All foundation excavation and/or preparation shall be completed before placing fill. The fill shall be placed such that the distribution of materials is essentially uniform throughout the entire fill and is free from lenses, pockets, streaks, frozen material or layers of material differing substantially from surrounding material. No fill shall be placed on a frozen surface.

Equipment weighing 400 pounds or more per foot of width shall not be operated within 2 feet of any structure.

Fill shall be placed in approximately equal horizontal layers. Fill layer thickness before compaction shall not exceed nine (9) inches for machine compaction. The foundation area shall be bonded with the first layer of fill. Fill layer thickness adjacent to structure walls shall not exceed four (4) inches before compaction by hand directed power tampers.

14.5 MOISTURE CONTENT

Moisture content for the fill matrix at the time of compaction shall be specified within the range of +/- 2% of the optimum moisture as determined using ASTM D-698. Adequate moisture to control dust shall be maintained at all work areas.

The fill material shall be brought to the specified moisture range before compaction. Material that is too wet for compaction shall be allowed to dry before compaction or be removed from the fill.

If the top surface of a preceding layer or foundation is too dry, the surface shall be scarified and moistened prior to placement of the next layer of fill material.

14.6 COMPACTION

The compacted fill shall have a density of not less than 95% of the standard proctor density as determined by ASTM D-698.

Compaction of backfill adjacent to structures is governed by Construction Specification CS-17, Structural Backfill.

14.7 STRUCTURES OR CONDUITS

The passage of heavy equipment shall not be allowed over cast-in-place conduits until 14 days after placement of the concrete. The passage of heavy equipment over conduits shall not be allowed until the height of the compacted backfill above the top surface of the conduit equals one-half of the clear span width of the conduit, or two (2) feet, whichever is greater.

14.8 TESTING

The in-place density of the compacted fill shall be determined during the course of the work by the contractor using test procedures ASTM D-1556, “Density of Soil in Place by the Sand-Cone Method,” ASTM D-2167, “Density of Soil in Place by the Rubber Balloon Method,” or ASTM D-2922, “Density of Soil in Place by Nuclear Methods,” using the direct Transmission Method.

Field tests to determine the moisture content of compacted earthfill shall be conducted during the course of the work by the contractor following methods described in ASTM D-2216 “Overnight Oven Drying", ASTM D-3017 “Nuclear Method", ASTM D-4643 “Microwave Oven Heating”. or ASTM D-4944 “Calcium Carbide Gas Pressure Tester”. Moisture readings from ASTM D-3017, ASTM D-4643, or ASTM D-4944 from at least one liner material sample shall be verified by the oven-dry method described in ASTM D-2216.

Test procedures and records shall be maintained for the installation.